



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,358	04/19/2004	Harlan I. Halsey	LAM2P324A	4895
25920	7590	10/18/2005	EXAMINER	
MARTINE PENILLA & GENCARELLA, LLP 710 LAKEWAY DRIVE SUITE 200 SUNNYVALE, CA 94085			MOORE, KARLA A	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/828,358

Applicant(s)

HALSEY ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 19 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,244,811 to Takano in view of U.S. Patent No. 6,234,107 to Tanaka et al.

4. Takano discloses a chamber (Figure 1, 1) capable of transitioning a semiconductor substrate between modules operating at different pressures substantially as claimed, the chamber comprising: a base defining an outlet, the outlet permitting removal of an atmosphere within the chamber to create a vacuum (see column 6, rows 14-17); a substrate support (13) configured to support a semiconductor wafer substrate within the chamber; a top having an inlet, the inlet configured to allow for the introduction of a gas into the chamber to displace moisture in a region defined above the substrate support (column 6, rows 21-23); and sidewalls extending from the base to the top, the sidewalls including access ports for entry (14) and exit (7) of a semiconductor substrate.

Art Unit: 1763

5. However, Takano fails to teach the chamber comprising a top and bottom substrate support, the top substrate configured to receive a first substrate from one of the modules and the bottom substrate support configured to receive a second substrate from a different one of the modules.

6. Tanaka et al. teach using an auxiliary chamber (Figures 1-2 and 5, 12 and 13) comprising a top and bottom substrate support for the purpose of heating or cooling substrates while transitioning between modules (Figures 1-2 and 5; column 3, rows 38-45 and 56-64; column 5, rows 36-49). Each of the supports can receive or deliver to both of the adjacent modules.

7. It would have been obvious to one of ordinary skill in the art at the time they have provided top and bottom substrate supports in Takano in order to heat or cool a substrate while transitioning between modules as taught by Tanaka et al.

8. With respect to claim 3, the outlet of the chamber is in communication with a vacuum pump (4) used to create a vacuum in the chamber.

9. With respect to claim 4, the gas introduced into the chamber is an inert gas (column 6, rows 21-23). However, Examiner notes that Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

10. With respect to claim 12, as mentioned above, each of the substrate supports can support substrates from either module (i.e. processed or unprocessed substrates).

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takano and Tanaka et al. as applied to claims 1, 3-4 and 12 above and further in view of U.S. Patent No. 5,735,961 to Shimada.

12. Takano and Tanaka et al. disclose the invention substantially as claimed and as described above, including an inlet for the inert gas defined above the substrate support.

13. However, Takano and Tanaka et al. fail to teach the chamber further comprising a diffuser in communication with the inlet.

Art Unit: 1763

14. Shimada teaches the use of a diffuser for the purpose of supplying a gas at predetermined intervals along a length thereof in a diffused fashion (column 2, rows 13-17).

15. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a diffuser in communication with inlet in Takano and Tanaka et al. in order to supply gas at predetermined intervals along the length thereof in a diffused fashion as taught by Shimada.

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takano, Tanaka et al. and Shimada as applied to claim 2 above, and further in view of U.S. Patent No. 5,455,082 to Saito et al.

17. Takano, Tanaka et al. and Shimada disclose the invention substantially as claimed and as described above.

18. However, Takano, Tanaka et al. and Shimada fail to teach a distance between the bottom surface of the diffuser and a top surface of a semiconductor resting the substrate support is between about 3 mm and about 3 cm.

19. Saito et al. teach minimization of a load lock chamber for the purpose of minimizing the time required for evacuation (column 1, rows 31-38). The distance from the substrate to diffuser would obviously depend on the size of the chamber. Choosing to design a chamber with a minimized total size would obviously translate to a minimized distance between the diffuser and a substrate. Further, the size of the chamber would, also, obviously be related to the size of the wafers to be processed in the chamber.

20. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a chamber (and thus, a distance between the bottom surface of the diffuser and the substrate to be processed) minimized in size in Takano, Tanaka et al. and Shimada in order to minimize the time for evacuation as taught by Saito et al.

21. Claims 6-7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,244,811 to Takano in view of U.S. Patent No. 6,234,107 to Tanaka et al. and U.S. Patent No. 6,244,811 to Kroeker et al.

Art Unit: 1763

22. Takano discloses a system for processing a semiconductor substrate substantially as claimed and comprising: a first transfer area (Figure 1, adjacent load lock chamber, 1) configured to operate at a first pressure; a second transfer module (3) configured to operate at a second pressure; a pressure varying interface (1) located between the first transfer area and the second transfer module, the pressure varying interface capable of transitioning between the first and second pressures, the pressure varying interface having a substrate support, a top vent (5) and a bottom vacuum port (4), the top vent port configured to introduce a fluid into the pressure varying interface, wherein the introduction of the fluid displaces moisture in a region defined above the substrate support (column 6, rows 21-23).

23. However, Takano fails to teach the chamber comprising a top and bottom substrate support, the top and bottom substrate supports capable of supporting substrates having different processing states.

24. Tanaka et al. teach using an auxiliary chamber (Figures 1-2 and 5, 12 and 13) comprising a top and bottom substrate support, the top and bottom substrate supports capable of supporting substrates having different processing states, for the purpose of heating or cooling substrates while transitioning between modules (Figures 1-2 and 5; column 3, rows 38-45 and 56-64; column 5, rows 36-49). Each of the supports can receive or deliver to both of the adjacent modules.

25. It would have been obvious to one of ordinary skill in the art at the time the have provided top and bottom substrate supports in Takano et al. in order to heat or cool a substrate while transitioning between modules as taught by Tanaka et al.

26. Takano further fails to teach the first transfer area as a module, rather in the disclosure of Takano, the area is just an area at atmospheric pressure.

27. Kroeker et al. teach the use of a first transfer module (atmospheric transfer module, Figure 2, 206; column 4, rows 54-57) for the purpose of transferring one or more substrates from one or more cassettes into a load lock.

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a first transfer module in Takano and Tanaka et al. in order to transfer one or more substrate from one or more cassettes into a load lock as taught by Kroeker et al.

29. With respect to claim 7 the pressure varying interface is a load lock (see Figure 1).

30. With respect to claim 9, the pressure varying interface is capable of having an inert gas introduced (column 6, rows 21-23). However, Examiner notes that Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

31. With respect to claim 10, the pressure varying interface includes a first access port (14) to provided access to the first transfer area and a second access port (7) to provide access to the second transfer module.

32. With respect to claim 11, the pressure varying interface is capable of having the fluid introduced when the first access port is open. Takano teaches that a fluid should flow into the pressure varying interface at all times (column 3, row 64 through column 4, row 10). However, Examiner notes that the courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). The courts have also ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

33. With respect to claim 13, as mentioned above, each of the substrate supports can support substrates from either module (i.e. processed or unprocessed substrates).

34. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takano, Tanaka et al. and Kroeker et al. as applied to claims 6-7, 9-11 and 13 above, further in view of U.S. Patent No. 5,735,961 to Shimada.

35. Takano, Tanaka et al. and Kroeker et al. disclose the invention substantially as claimed and as described above, including an inlet for the inert gas defined above the substrate support.

Art Unit: 1763

36. However, Takano, Tanaka et al. and Kroeker et al. fail to teach the chamber further comprising a diffuser in communication with the inlet.

37. Shimada teaches the use of a diffuser for the purpose of supplying a gas at predetermined intervals along a length thereof in a diffused fashion (column 2, rows 13-17).

38. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a diffuser in communication with inlet in Takano, Tanaka et al. and Kroeker et al. in order to supply gas at predetermined intervals along the length thereof in a diffused fashion as taught by Shimada.

Response to Arguments

39. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection. Tanaka et al. has been relied upon for teaching a load lock with top and bottom substrate supports to account for Applicant's amendments to the claims.

Conclusion

40. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1763

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



km
16 October 2005



Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763